

# PHILIPS

## Xitanium

### LED Transformers



## Datasheet

### LED Transformer 60W 24VDC TD 220-240V

9290 022 00506

Philips full-electronic constant voltage DALI LED Transformers are designed to operate dimmable 24VDC LED solutions used for linear accent lighting in general applications such as hotel rooms, restaurants and retail displays. These state-of-the-art drivers offer a high degree of controllability, either via the digital DALI protocol or via Touch and Dim mains voltage control and are specifically designed to ensure the highest performance with maximum robustness combined with a long lifetime.

#### Benefits

- SELV operating voltage, ensuring safety even if wiring or LED boards become damaged
- Energy savings through high efficiency
- Ultimate robustness, offering peace of mind and lower maintenance costs
- Easy to design-in and install
- Long lifetime

#### Features

- Combined DALI 2 and Touch and Dim control interface
- Independent use for Insulation Class II application
- Stable output voltage
- Wide ambient temperature range
- Protection against overpower and overvoltage
- Output short-circuit shutdown feature with automatic restart
- Global approbations and certifications

#### Application

- Retail display lighting, linear accent lighting and refrigerated display lighting
- Shelf lighting
- Cove lighting
- Facade accent lighting
- Coolers and freezers

## Electrical input data

| Specification item           | Value     | Unit            | Condition  |
|------------------------------|-----------|-----------------|--|
| Rated input voltage range    | 202...254 | V <sub>ac</sub> | Performance range  |
| Rated input voltage          | 230       | V <sub>ac</sub> |  |
| Rated input frequency range  | 47...63   | Hz              | Performance range  |
| Rated input current          | 0.32      | A               | @ rated output power @ rated input voltage               |
| Max. input current           | 0.34      | A               | @ rated output power @ minimum performance input voltage |
| Rated input power            | 69        | W               | @ rated output power @ rated input voltage               |
| Power factor                 | 0.98      |                 | @ rated output power @ rated input voltage               |
| Total harmonic distortion    | 10        | %               | @ rated output power @ rated input voltage               |
| Efficiency                   | 90        | %               | @ rated output power @ rated input voltage               |
| Rated input voltage DC range | 186...250 | V <sub>dc</sub> | Performance range, external DC-rated fuse not required   |
| Input voltage AC range       | 198...264 | V <sub>ac</sub> | Safety operational range                                 |
| Input frequency AC range     | 45...66   | Hz              | Safety operational range                                 |
| Input voltage DC range       | 168...275 | V <sub>dc</sub> | Safety operational range                                 |
| Standby Power                | 0.45      | W               |  |
| Isolation input to output    | SELV      |                 |  |

## Electrical output data

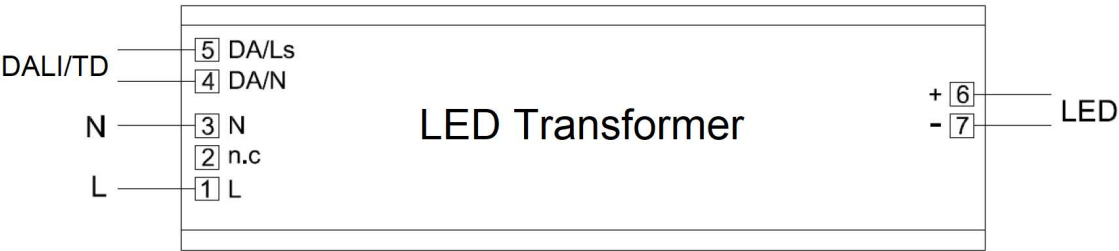
| Specification item       | Value            | Unit             | Condition   |
|--------------------------|------------------|------------------|---|
| Regulation method        | Constant Voltage |                  |   |
| Output voltage           | 24               | V <sub>dc</sub>  | Output voltage range: 22.8 ... 25.2VDC @ output current range 0.75 ... 2.5A |
| Output voltage max.      | 26               | V                |   |
| Output current           | 0.1...2.5        | A                |   |
| Output voltage ripple    | ≤ 240            | mV <sub>pp</sub> |   |
| Output power             | 0...60           | W                |   |
| Line regulation          | ≤ 1              | %                |   |
| Load regulation          | ≤ 5              | %                |   |
| Turn-on delay            | ≤ 1              | s                | With Integrate engine 24VDC module at rated output power                    |
| Output voltage rise time | ≤ 30             | ms               |   |
| Hold-up time             | ≥ 10             | ms               |   |

## Electrical data controls input

| Specification item                 | Value                  | Unit | Condition  |
|------------------------------------|------------------------|------|--|
| Control method                     | DALI, Touch & Dim (TD) |      | Per DALI 2 standard. For certification status please visit: <a href="http://www.digitalilluminationinterface.org/products">www.digitalilluminationinterface.org/products</a> . Please refer to design-in guide for more controllability details. |
| Dimming range                      | 1...100                | %    | Based on PWM, f > 2kHz. Dimming curve = logarithmic.<br><b>Note:</b> minimum output loading at full light output must be at least 20W to ensure stable dimming down to 1%.   |
| Isolation controls input to output | Double                 |      | acc. IEC61347-1  |

Wiring and Connections

| Specification item              | Value                | Unit                  | Type  |
|---------------------------------|----------------------|-----------------------|---|
| Input wire cross-section        | 0.75...2.5 / 14...18 | mm <sup>2</sup> / AWG | Solid / stranded wire   |
| Input wire strip length         | 6...7                | mm                    |   |
| Output wire cross-section       | 0.5...2.5 / 14...20  | mm <sup>2</sup> / AWG | Solid / stranded wire   |
| Output wire strip length        | 6...7                | mm                    |   |
| Control wire cross-section      | 0.75...2.5 / 14...18 | mm <sup>2</sup> / AWG | Solid / stranded wire   |
| Control wire strip length       | 6...7                | mm                    |   |
| Strain relief screw max. torque | 0.5                  | Nm                    |   |
| Connector screw max. torque     | 0.5                  | Nm                    |   |
| Maximum cable length            | 2.5                  | m                     | Total cable length between driver and LED modules per CISPR15 |



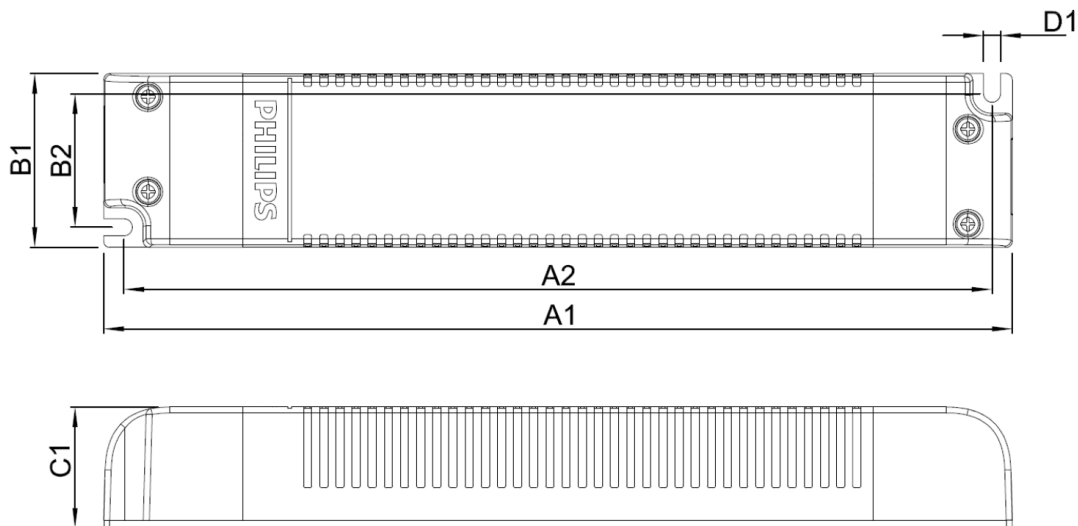
For independent application: minimum wire cross section = 0.75mm<sup>2</sup> / 18AWG for output current > 2A

Insulation

| Insulation per IEC61347-1 | Mains | LED    | DALI/TD |
|---------------------------|-------|--------|---------|
| Mains                     |       | SELV   | Basic   |
| LED                       | SELV  |        | Double  |
| DALI/TD                   | Basic | Double |         |

## Dimensions and weight

| Specification item          | Value | Unit | Tolerance (mm) |
|-----------------------------|-------|------|----------------|
| Length (A1)                 | 225   | mm   |                |
| Mounting hole distance (A2) | 215   | mm   |                |
| Width (B1)                  | 43    | mm   |                |
| Width (B2)                  | 33    | mm   |                |
| Height (C1)                 | 30    | mm   |                |
| Mounting hole diameter (D1) | 4.2   | mm   |                |
| Weight                      | 315   | gram |                |



## Logistical data

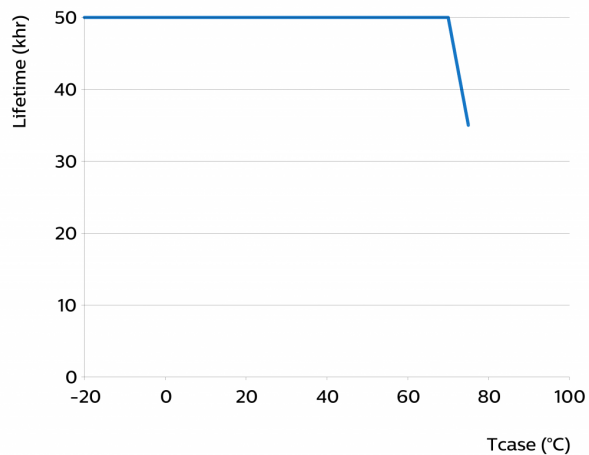
| Specification item | Value                                 |
|--------------------|---------------------------------------|
| Product name       | LED Transformer 60W 24VDC TD 220-240V |
| EOC                | 692234193150500                       |
| Logistic code 12NC | 9290 022 00506                        |
| EAN1 (GTIN)        | 6922341931505                         |
| EAN3               | 06922341931512                        |
| Pieces per box     | 20                                    |

## Operational temperatures and humidity

| Specification item          | Value     | Unit | Condition   |
|-----------------------------|-----------|------|---|
| Ambient temperature         | -20...+50 | °C   | Higher ambient temperature allowed as long as T <sub>case-max</sub> is not exceeded |
| T <sub>case-max</sub>       | 75        | °C   | Maximum temperature measured at T <sub>case-point</sub>                             |
| T <sub>case-life</sub>      | 70        | °C   | Measured at T <sub>case-point</sub>   |
| Maximum housing temperature | 110       | °C   | In case of a failure, inherent by design  |
| Relative humidity           | 10...90   | %    | Non-condensing  |

## Lifetime

| Specification item | Value  | Unit  | Condition   |
|--------------------|--------|-------|---|
| Driver lifetime    | 50,000 | hours | Measured temperature at Tcase-point is Tcase-life. Maximum failures = 10% |



## Storage temperature and humidity

| Specification item  | Value     | Unit | Condition      |
|---------------------|-----------|------|----------------|
| Ambient temperature | -20...+85 | °C   |                |
| Relative humidity   | 5...95    | %    | Non-condensing |

## Features

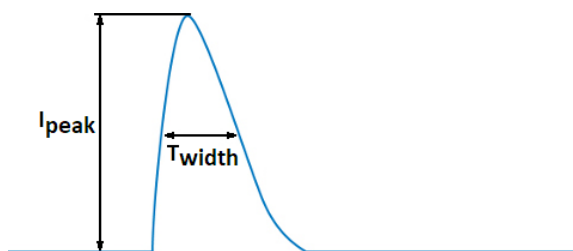
| Specification item | Available | Default setting | Condition  |
|--------------------|-----------|-----------------|--|
| Touch & Dim (TD)   | Yes       | ON              | Note: when using Touch and Dim, do not combine with constant-current type TD LED drivers connected to the same TD controller/switch. The Touch & Dim feature of this driver is not configurable. This driver is not equipped with the Corridor Mode feature. |

## Features

| Specification item                          | Value |  | Condition                         |
|---|-------|--|-----------------------------------|
| Open load protection                        | Yes   |  | Uout (open circuit) = 26V max.    |
| Short circuit protection                    | Yes   |  | Hiccup mode, automatic recovering |
| Over power protection                       | Yes   |  | Automatic recovering              |
| Hot wiring                                  | Yes   |  |                                   |
| Suitable for fixtures with protection class | II    |  | per IEC60598                      |
| Overtemperature protection                  | Yes   |  | Automatic recovering              |

## Inrush current

| Specification item         | Value     | Unit    | Condition                                      |
|----------------------------|-----------|---------|--|
| Inrush current $I_{peak}$  | 43        | A       | Input voltage 230V                             |
| Inrush current $T_{width}$ | 150       | $\mu s$ | Input voltage 230V, measured at 50% $I_{peak}$ |
| Drivers / MCB 16A type B   | $\leq 21$ | pcs     | Indicative value                               |



| MCB | Rating | Relative number of LED drivers |
|-----|--------|--------------------------------|
| B   | 4A     | 25%                            |
| B   | 6A     | 40%                            |
| B   | 10A    | 63%                            |
| B   | 13A    | 81%                            |
| B   | 16A    | 100% (stated in datasheet)     |
| B   | 20A    | 125%                           |
| B   | 25A    | 156%                           |
| B   | 32A    | 200%                           |
| B   | 40A    | 250%                           |
| C   | 4A     | 42%                            |
| C   | 6A     | 63%                            |
| C   | 10A    | 104%                           |
| C   | 13A    | 135%                           |
| C   | 16A    | 170%                           |
| C   | 20A    | 208%                           |
| C   | 25A    | 260%                           |
| C   | 32A    | 340%                           |
| C   | 40A    | 415%                           |

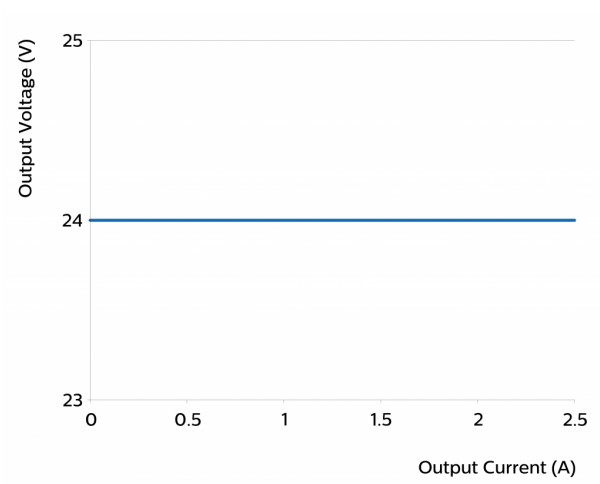
## Surge immunity

| Specification item                  | Value | Unit | Condition                              |
|-------------------------------------|-------|------|--|
| Mains surge immunity (diff. mode)   | 1     | kV   | L-N acc. IEC61000-4-5, 2 Ohm           |
| Control surge immunity (diff. mode) | 1     | kV   | DA/Ls - DA/N, acc. IEC61000-4-5, 2 Ohm |

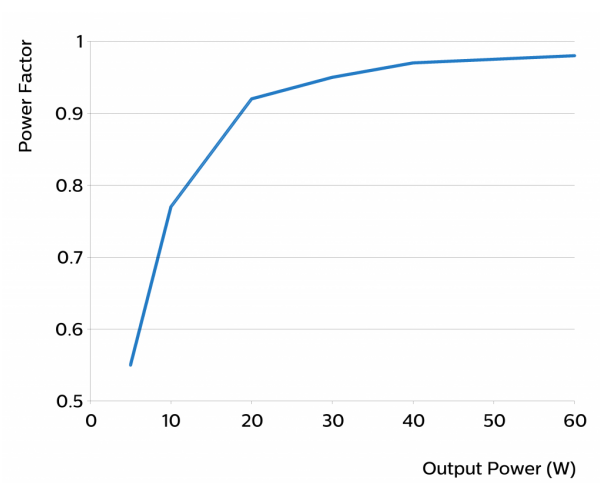
## Application Info

| Specification item                     | Value   |
|--|---|
| Approval marks                         | 110 / CCC / CE / DALI 2 / Double-insulated / EL / ENEC / Independent / KC / MM / RCM / SELV |
| Ingress Protection classification (IP) | 20  |
| Noise and hum dB(A)                    | 20  |
| Application                            | Indoor Constant Voltage   |
| Mounting Type                          | Independent   |

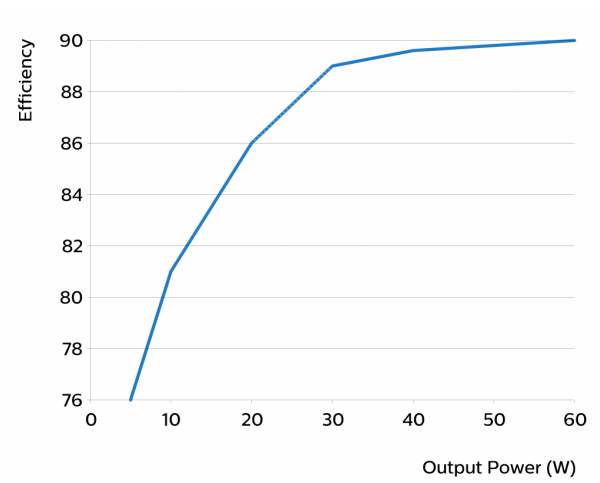
Operating window



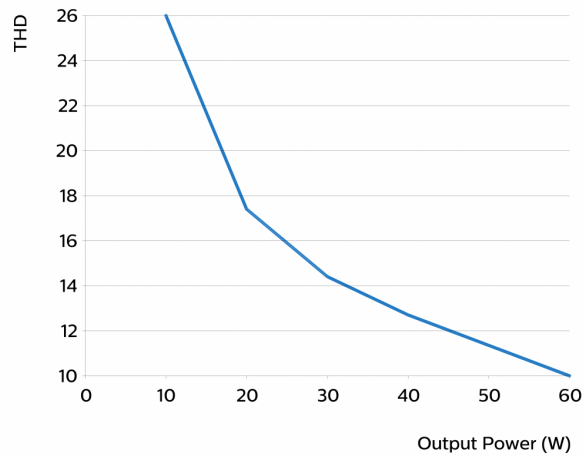
Power factor versus output power



Efficiency versus output power



## THD versus output power



## Notes

### Ingress Protection (IP):

The LED Transformer is primarily intended for independent use. It must not be exposed including but not limited to snow, water and ice or any other chemical agent which may have an adverse affect on driver operation and performance. Exposure may lead to driver failure. It is the luminaire manufacturer's / installer's responsibility to prevent exposure.

### Mains input cable:

supported cable diameter range = 3.3 ... 8.0mm

### LED output cable:

supported cable diameter range = 2.0 ... 5.0mm

### Control input cable:

supported cable diameter range = 3.3 ... 8.0mm



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